

REMARKS

Claims 1, 4, 6 and 7 have been amended. Claims 5, 8 and 11-14 have been cancelled herein without prejudice.

Claims 1, 4-8 and 11-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US Patent 6,285,408) ("Choi") in view of Hazra (US Patent 6,510,553) and further in view of Xue et al. (US Patent 6,711,181) ("Xue"). Applicant has amended independent claim 1 and with respect to this claims, and its dependent claims, the Examiner's rejection is respectfully traversed.

Independent claim 1 has been amended to more clearly define the invention. Specifically, claim 1 has been amended to recite an image processing apparatus comprising: a reception unit that receives first, second, and third encoded image data, a decoding unit that decodes the first encoded image data to generate a main frame, a sub frame generating unit that extracts a low frequency component from the second encoded image data, extracts a low frequency component from the third encoded image data, generates a first sub frame from the low frequency component of the second encoded image data, and generates a second sub frame from the low frequency component extracted from the third encoded image data and an image signal generating unit that combines the main frame generated from the first encoded image data, the first sub frame generated from the low frequency component of the second encoded image data, and the second sub frame generated from the low frequency component of the third encoded image data, and generates an image signal including the main frame generated from the first encoded image data, the first sub frame generated from the low frequency component of the second encoded image data, and the second sub frame generated from the low frequency component of the third encoded image data and wherein if a switching key is rotated to left

side, (a) the decoding unit decodes the second encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the third encoded image data, extracts a low frequency component from the first encoded image data, generates the first sub frame from the low frequency component extracted from the third encoded image data, and generates the second sub frame from the low frequency component extracted from the first encoded image data, and (c) the image signal generating unit combines the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data, and generates an image signal including the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data, and wherein if the switching key is rotated to right side, (a) the decoding unit decodes the third encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the first encoded image data, extracts the low frequency component from the second encoded image data, generates the first sub frame from the low frequency component extracted from the first encoded image data, and generates the second sub frame from the low frequency component extracted from the second encoded image data, and (c) the image signal generating unit combines the main frame generated from the third encoded image data, the first sub frame generated from the low frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data, and generates an image signal including the main frame generated from the third encoded image data, the first sub frame generated from the low

frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data. Support for these amendments may be found at least on page 7, lines 1-26, of the Specification.

The construction recited in amended independent claim 1 is not taught or suggested in the cited prior art. Specifically, the Choi, Hazra and Xue patents do not teach or suggest an image processing apparatus in which if a switching key is rotated to left side, (a) the decoding unit decodes the second encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the third encoded image data, extracts a low frequency component from the first encoded image data, generates the first sub frame from the low frequency component extracted from the third encoded image data, and generates the second sub frame from the low frequency component extracted from the first encoded image data, and (c) the image signal generating unit combines the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data, and generates an image signal including the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data. Similarly, the Choi, Hazra and Xue patents also do not teach or suggest that if the switching key is rotated to right side, (a) the decoding unit decodes the third encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the first encoded image data, extracts the low frequency component from the second encoded image data, generates the first sub frame from the low frequency component

extracted from the first encoded image data, and generates the second sub frame from the low frequency component extracted from the second encoded image data, and (c) the image signal generating unit combines the main frame generated from the third encoded image data, the first sub frame generated from the low frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data, and generates an image signal including the main frame generated from the third encoded image data, the first sub frame generated from the low frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data. These limitations recite that one of three encoded image data be decoded by a decoding unit to generate the main frame of an image signal comprised of the main frame, a first sub-frame and a second sub-frame. The position of a switching key determines which one of the three encoded image data is decoded by the decoding unit. The first and second sub-frames are then generated by extracting the low frequency components from the remaining two encoded image data, respectively.

Choi discloses a digital A/V system that allows a user to simultaneously view two video signals (col. 3, lines 44-51). As shown in Fig. 5, the digital A/V system includes a transport TS/PS demux 103 with inputs from a demodulated DTV source TS1, a demodulated DVCR source TS2, a DVD disk stream PS and a tape recording/reproducing unit 401 (col. 4, lines 16-19). The transport TS/PS demux 103, based on the function selected by a user, selects and decodes a combination of input signals and outputs separate video streams VS1 and VS2 and audio streams AS1 and AS2 (col. 4, lines 19-22). A HD-video decoder 104 decodes the video stream VS1 into a HD class video signal (col. 8, lines 22-24). A SD-video decoder 204 decodes the video stream VS2 into a SD class video signal (col. 8, lines 25-27). A VDP and

analog copy protection unit 105 processes the HD class and DS class video signals to display signals in a picture-in-picture format on an HD monitor 107 (27-30).

Therefore, Choi discloses digital A/V system that generates a PIP video signal comprised of a HD-class video signal generated by decoding a first video stream with a first HD-video decoder and a SD-class video signal generated by decoding a second video stream with a second SD-video decoder. However, Choi does not disclose a system in which one of three encoded image data are decoded by a decoding unit to generate the main frame of an image signal comprised of the main frame, a first sub-frame and a second sub-frame, the position of a switching key determining which one of the three encoded image data is decoded by the decoding unit, and the first and second sub-frames being generated from extracted low frequency components from the remaining two encoded image, respectively.

Hazra discloses a system for dual source real-time video streaming over a network. As shown in Fig. 2, the system includes two active signal sources, Source A 32 and Source B 34, connected to a network 36. The signal sources 32 and 34 are structured to provide streaming layered video streams using a protocol that provides for subscribing a different data rate to primary and secondary layers and thereby enabling a PIP mode of operation (col. 5, lines 21-36). A client system 38 accesses the layered video stream via a fixed bandwidth communication link 40 that connects the client system 38 to the network 36 (col. 5, lines 43-47). The client system 38 includes a decoder 42 for decoding each of the layered video streams and a graphical user interface 44 for displaying the video data signals of the streams and for accepting user input selections (col. 5, lines 48-51). The user defines a PIP configuration by selecting one source as the primary source within a first layer of a stream and a second source as the secondary source within a second layer of the stream (col. 5, lines 52-55). As shown in

Fig 3, once the layered video stream as defined by the user is received by the client system 38, the decoder 42 decodes both the primary source stream and secondary source stream and the resulting PIP video signal is displayed (col. 7, lines 24-30).

Therefore, Hazra discloses a system that generates a PIP video signal from a multi layers video stream by decoding both a primary video source within a first layer of the stream and a secondary video source within a second layer of the stream. However, Hazra does not disclose a system in which one of three encoded image data are decoded by a decoding unit to generate the main frame of an image signal comprised of the main frame, a first sub-frame and a second sub-frame, the position of a switching key determining which one of the three encoded image data is decoded by the decoding unit, and the first and second sub-frames being generated from extracted low frequency components from the remaining two encoded image data, respectively.

Accordingly, the combination of Choi and Hazra does not teach or suggest an image processing apparatus in which if a switching key is rotated to left side, (a) the decoding unit decodes the second encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the third encoded image data, extracts a low frequency component from the first encoded image data, generates the first sub frame from the low frequency component extracted from the third encoded image data, and generates the second sub frame from the low frequency component extracted from the first encoded image data, and (c) the image signal generating unit combines the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data, and generates an image

signal including the main frame generated from the second encoded image data, the first sub frame generated from the low frequency component of the third encoded image data, and the second sub frame generated from the low frequency component of the first encoded image data as recited in amended claim 1.

Similarly, the combination of Choi and Hazra also does not teach or suggest that if the switching key is rotated to right side, (a) the decoding unit decodes the third encoded image data to generate the main frame, (b) the sub frame generating unit extracts the low frequency component from the first encoded image data, extracts the low frequency component from the second encoded image data, generates the first sub frame from the low frequency component extracted from the first encoded image data, and generates the second sub frame from the low frequency component extracted from the second encoded image data, and (c) the image signal generating unit combines the main frame generated from the third encoded image data, the first sub frame generated from the low frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data, and generates an image signal including the main frame generated from the third encoded image data, the first sub frame generated from the low frequency component of the first encoded image data, and the second sub frame generated from the low frequency component of the second encoded image data as also recited in amended claim 1.

Moreover, Xue does not disclose anything to change this conclusion.

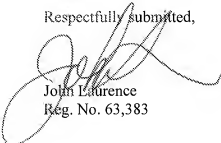
Therefore, none of the cited references discloses the above-described features of applicant's independent claim. Hence, applicant's amended claim 1, and its dependent claims, thus patentably distinguish over the combination of Choi, Hazra and Xue.

In view of the above, it is submitted that applicant's claims, as amended, patentably distinguish over cited art of record. Accordingly, reconsideration and allowance of the application and claims is respectfully requested.

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Respectfully submitted,

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